

**PDC2013  
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**The Dark Energy Camera Near Earth Asteroid survey: Simulations and object linking**

**B. Burt<sup>(1)</sup>, A. Earle<sup>(2)</sup>, C. Fuentes<sup>(1)</sup>, D. Trilling<sup>(1)</sup>, L. Allen<sup>(3)</sup>**

<sup>(1)</sup>*Northern Arizona University, PO Box 6010, Flagstaff, AZ 86011; bjb288@nau.edu*

<sup>(2)</sup>*Siena College*

<sup>(3)</sup>*NOAO*

**Keywords:** *Optical surveys; Dark Energy Camera*

**ABSTRACT**

We are carrying out a very sensitive optical survey for Near Earth Asteroids using the new Dark Energy Camera (DECAM) at NOAO's Cerro Tololo Inter-American Observatory in Chile. The survey itself and preliminary results are presented in Allen et al. (this conference). Here we present the extensive simulations that we have carried out to prepare for and understand the effectiveness of our survey. We have used LSST's Moving Object Processing System (MOPS) to link observations of synthetic objects and design the optimal observing cadence for this project. We will use MOPS on source lists extracted from survey data to link observations of real objects; fake objects will also be injected in the data stream to measure the efficiency of our survey. Our simulations and survey both serve as pathfinders for the upcoming LSST effort to find Near Earth Asteroids.